OIPE JC174
APR 13 2005
PATENT & TRADEMARK OFFICE

FIG. 1

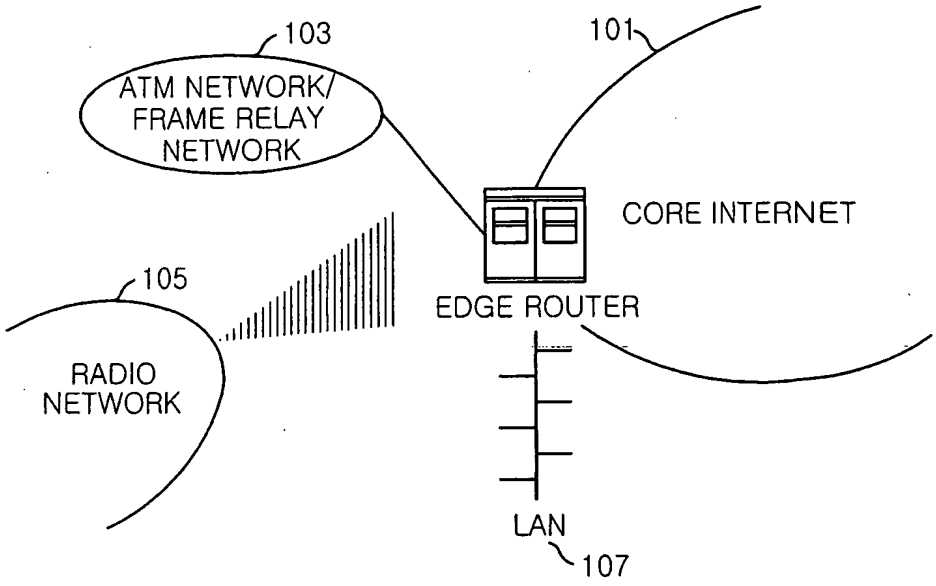


FIG. 2

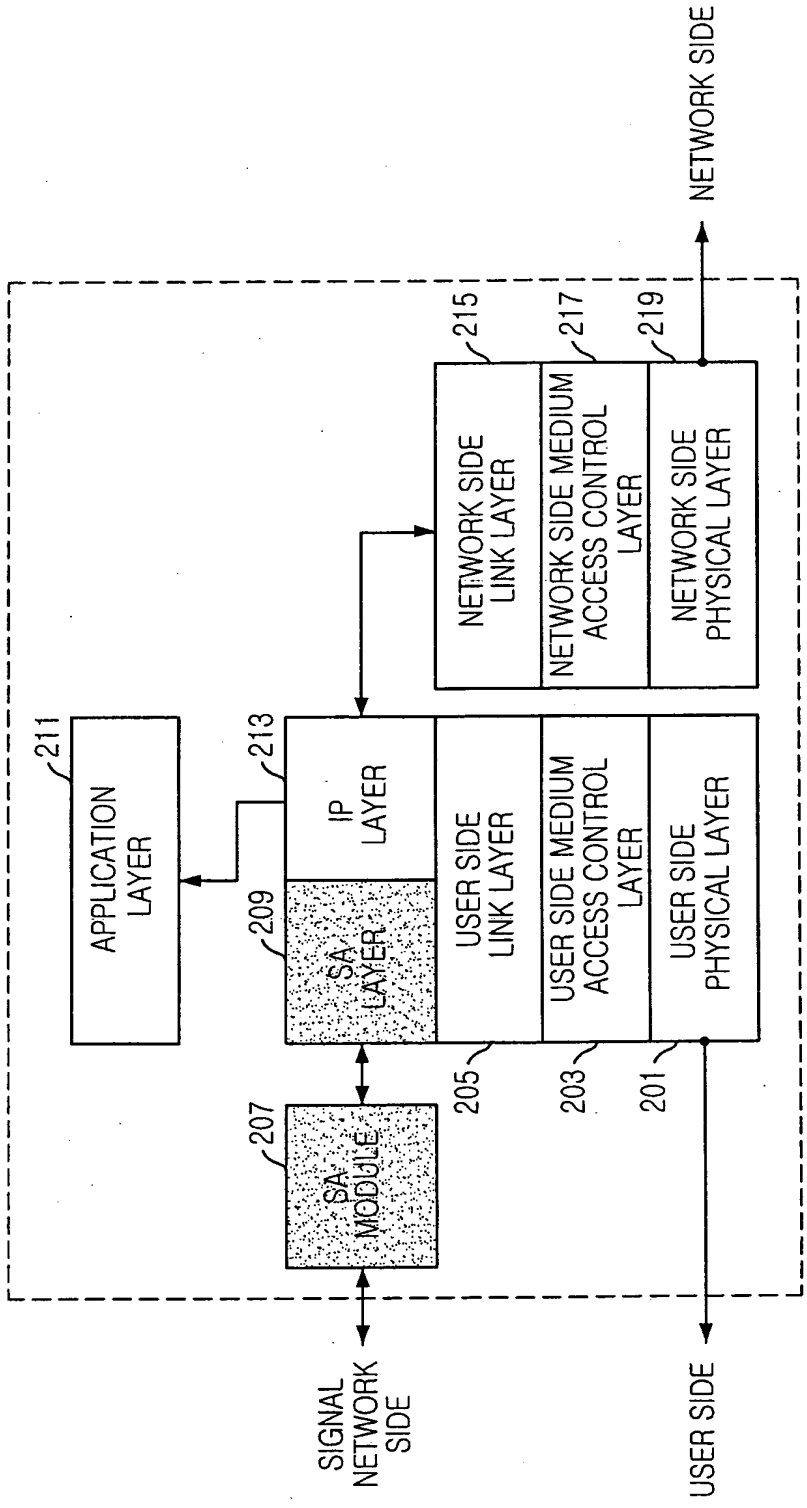

NETWORK SIDE
NETWORK SIDE LINK LAYER
NETWORK SIDE MEDIUM ACCESS CONTROL LAYER
NETWORK SIDE PHYSICAL LAYER
215
217
219
APPLICATION LAYER
211
IP LAYER
213
SA LAYER
209
USER SIDE LINK LAYER
USER SIDE MEDIUM ACCESS CONTROL LAYER
USER SIDE PHYSICAL LAYER
205
203
201
SA MODULE
207
SIGNAL NETWORK SIDE
USER SIDE

FIG. 3

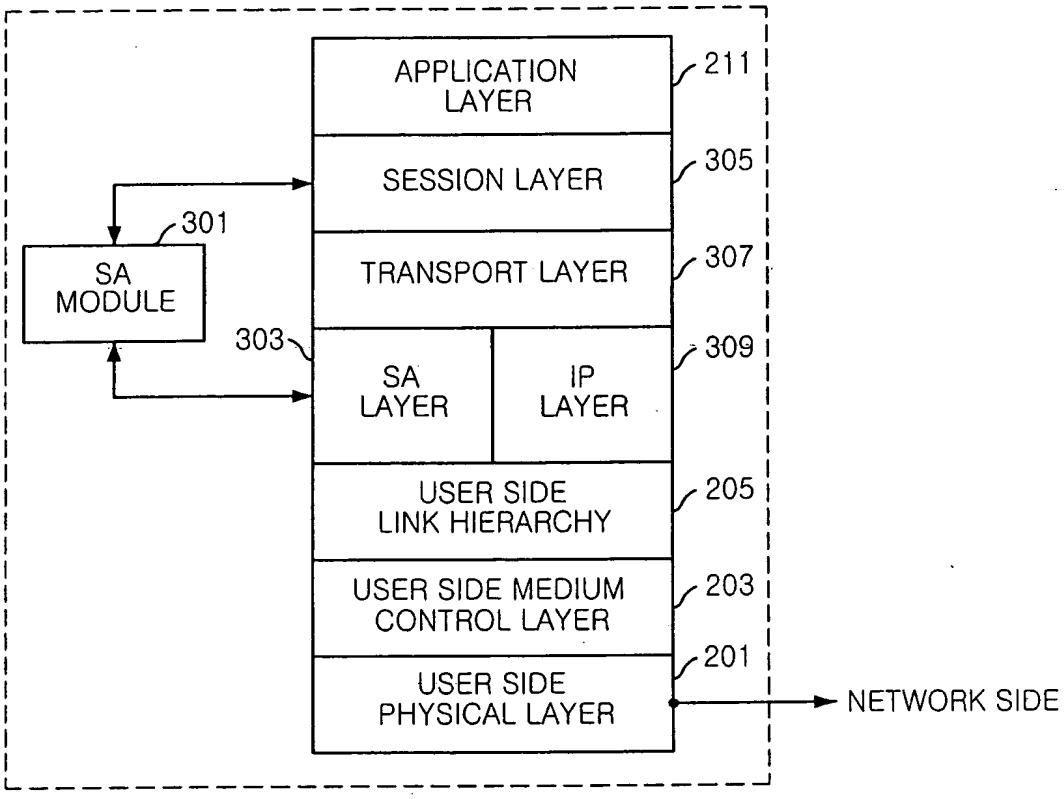

APPLICATION LAYER
211
SESSION LAYER
305
TRANSPORT LAYER
307
SA LAYER
IP LAYER
309
USER SIDE LINK HIERARCHY
205
USER SIDE MEDIUM CONTROL LAYER
203
USER SIDE PHYSICAL LAYER
201
NETWORK SIDE
SA MODULE
301
303

FIG. 4

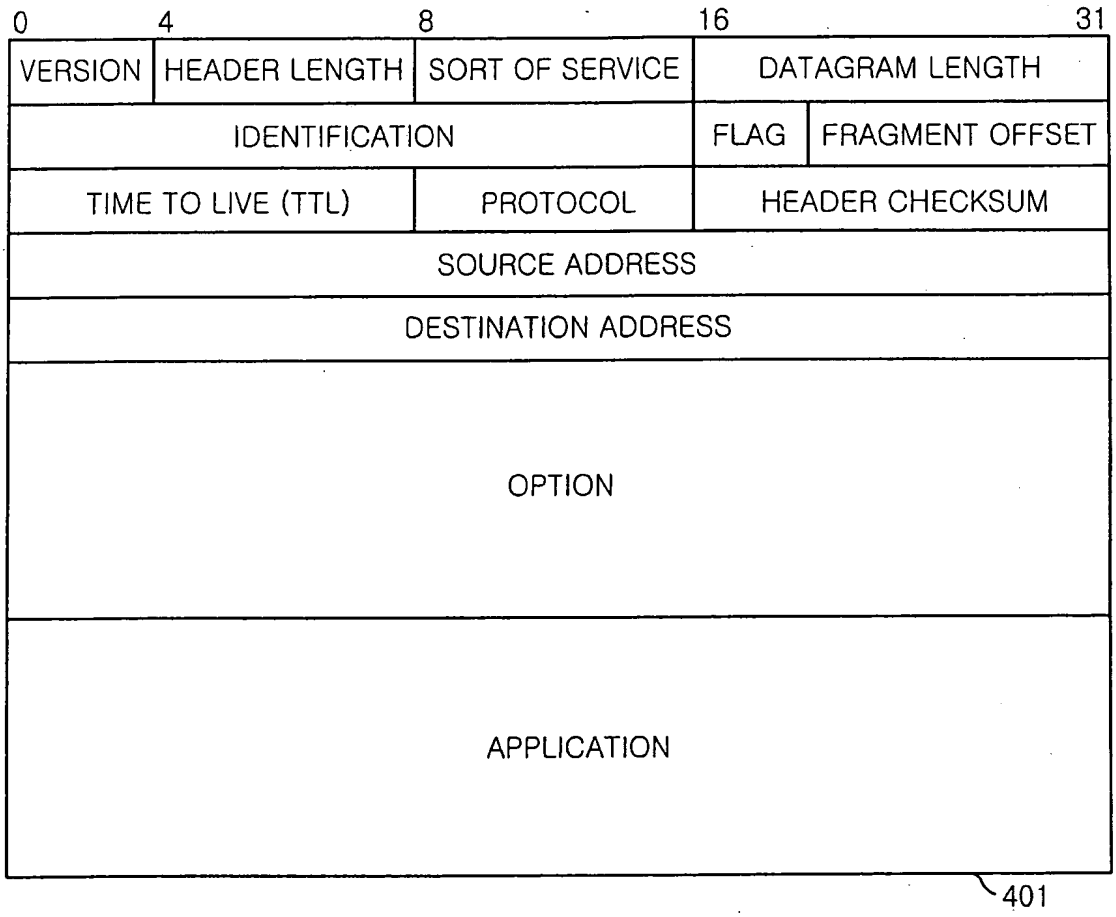
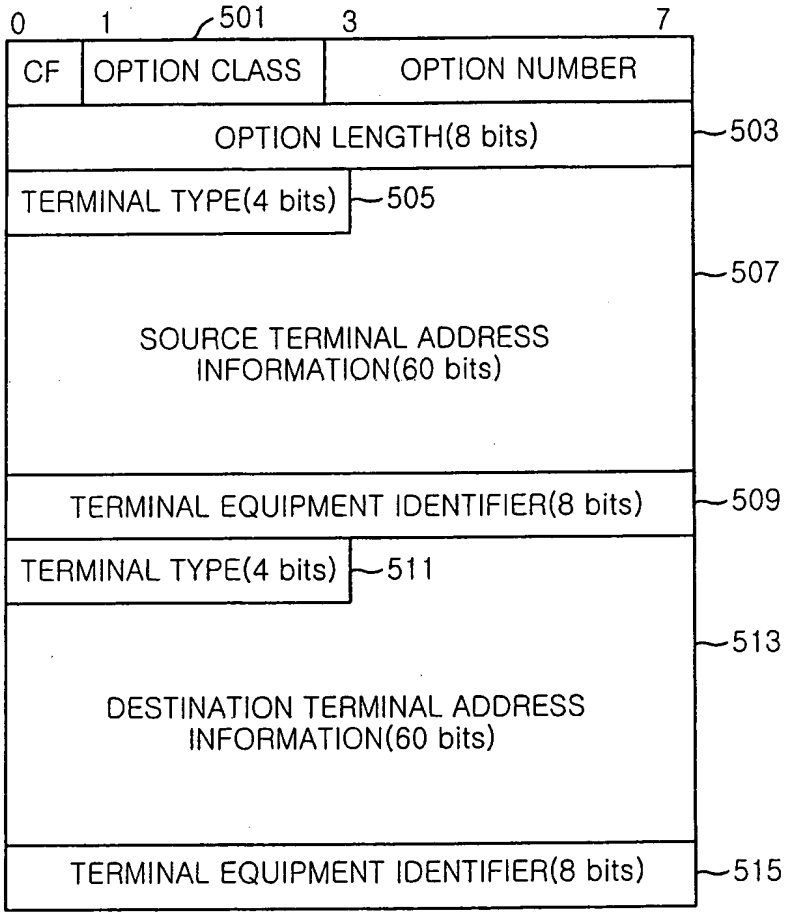

0
4
8
16
31
VERSION
HEADER LENGTH
SORT OF SERVICE
DATAGRAM LENGTH
IDENTIFICATION
FLAG
FRAGMENT OFFSET
TIME TO LIVE (TTL)
PROTOCOL
HEADER CHECKSUM
SOURCE ADDRESS
DESTINATION ADDRESS
OPTION
APPLICATION
401

FIG. 5


0
1
501
3
7
CF
OPTION CLASS
OPTION NUMBER
OPTION LENGTH(8 bits)
503
TERMINAL TYPE(4 bits)
505
507
SOURCE TERMINAL ADDRESS INFORMATION(60 bits)
TERMINAL EQUIPMENT IDENTIFIER(8 bits)
509
TERMINAL TYPE(4 bits)
511
513
DESTINATION TERMINAL ADDRESS INFORMATION(60 bits)
TERMINAL EQUIPMENT IDENTIFIER(8 bits)
515

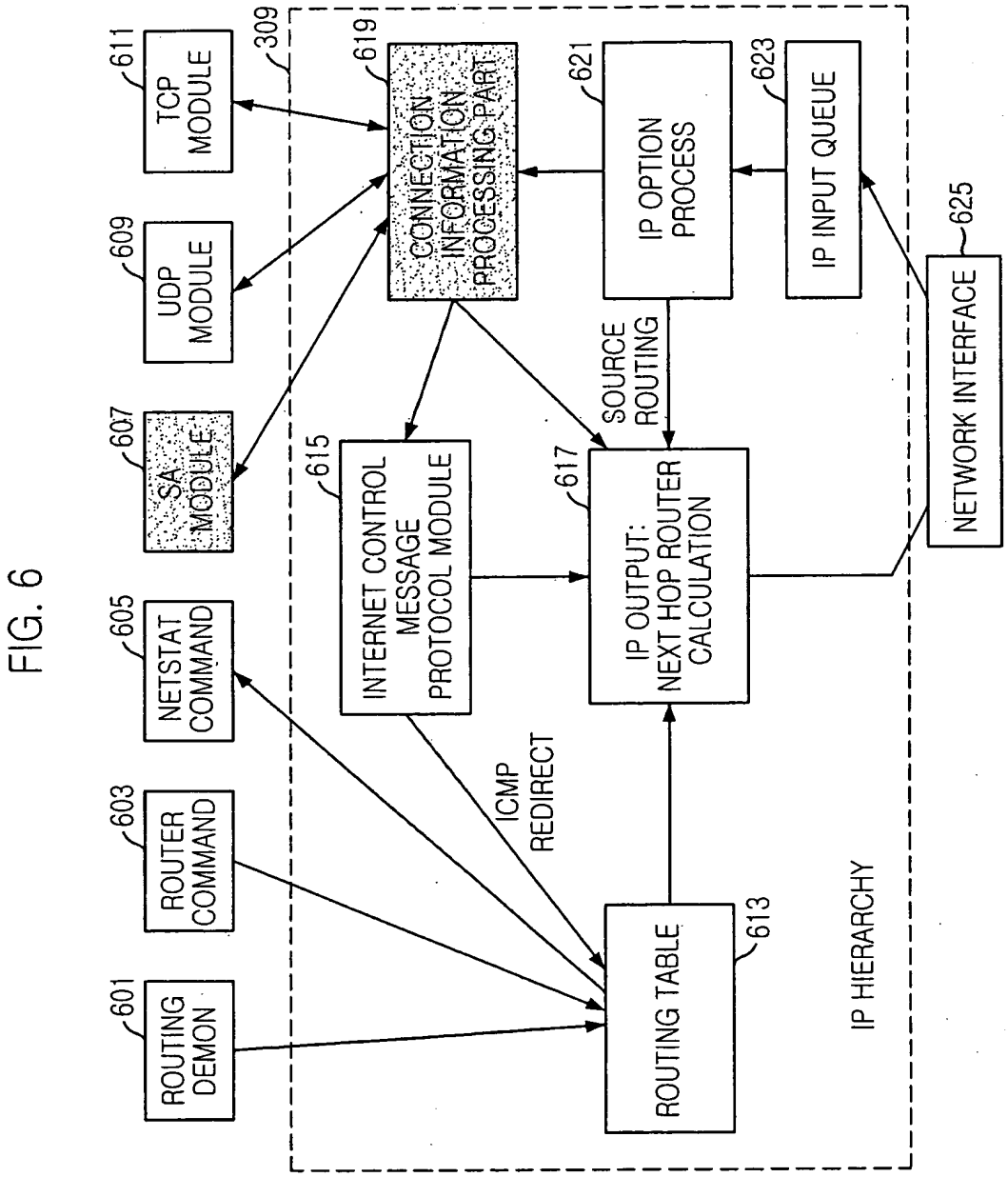

601
ROUTING DEMON
603
ROUTER COMMAND
605
NETSTAT COMMAND
607
SA MODULE
609
UDP MODULE
611
TCP MODULE
309
619
CONNECTION INFORMATION PROCESSING PART
621
IP OPTION PROCESS
623
IP INPUT QUEUE
625
NETWORK INTERFACE
615
INTERNET CONTROL MESSAGE PROTOCOL MODULE
617
IP OUTPUT: NEXT HOP ROUTER CALCULATION
SOURCE ROUTING
ICMP REDIRECT
613
ROUTING TABLE
IP HIERARCHY

FIG. 6

FIG. 7

701 E.164 ADDRESS	702 TEI	703 LINK IDENTIFIER
XXXXXXXXXXXXXX	XX	DLCI (IN CASE OF FRAME RELAY)
YYYYYYYYYYYYYY	YY	VPI/VCI (IN CASE OF ATM)

FIG. 8

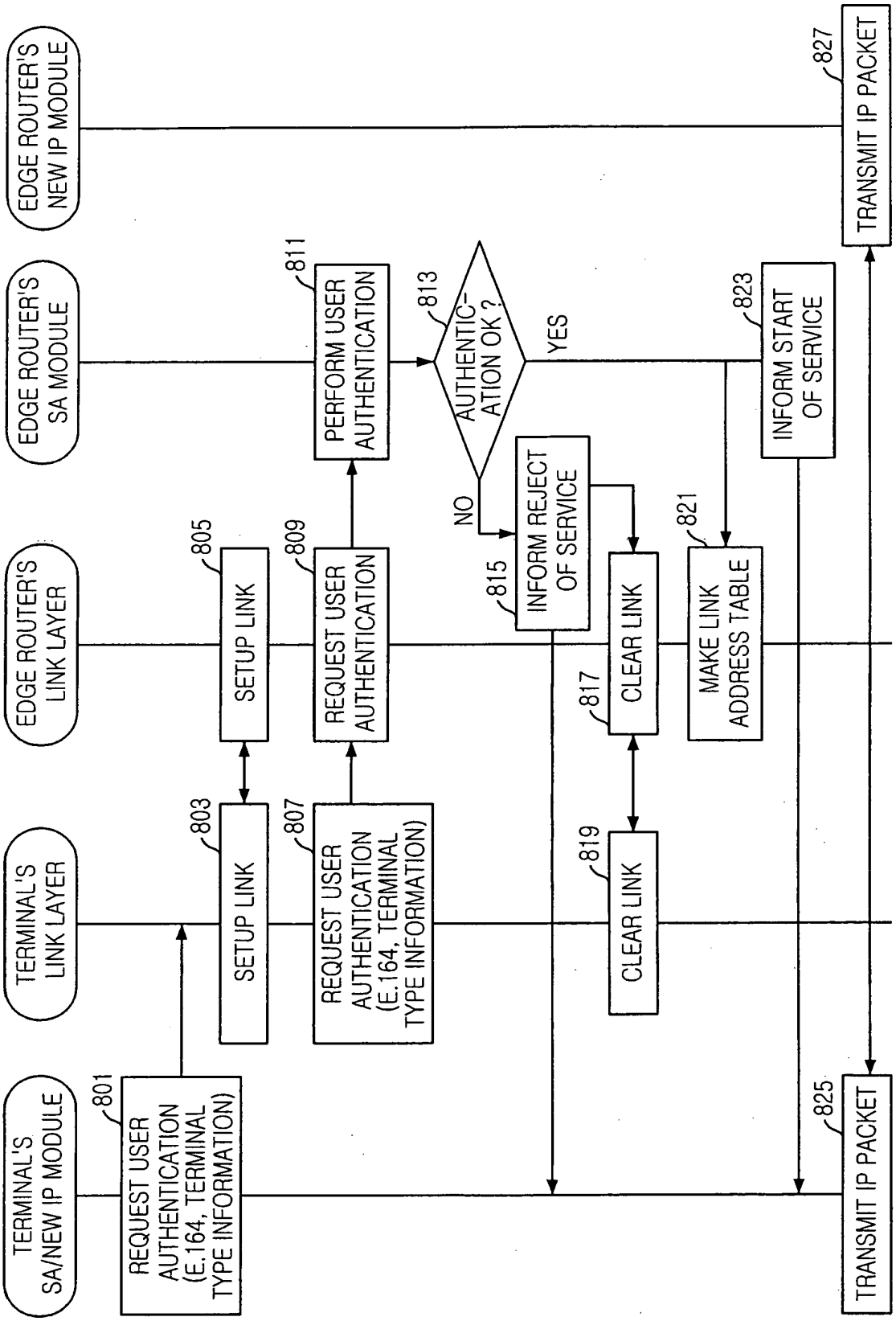

TERMINAL'S SA/NEW IP MODULE
TERMINAL'S LINK LAYER
EDGE ROUTER'S LINK LAYER
EDGE ROUTER'S SA MODULE
EDGE ROUTER'S NEW IP MODULE
801
REQUEST USER AUTHENTICATION (E.164, TERMINAL TYPE INFORMATION)
803
SETUP LINK
805
SETUP LINK
807
REQUEST USER AUTHENTICATION (E.164, TERMINAL TYPE INFORMATION)
809
REQUEST USER AUTHENTICATION
811
PERFORM USER AUTHENTICATION
813
AUTHENTIC-ATION OK ?
YES
NO
815
INFORM REJECT OF SERVICE
817
CLEAR LINK
819
CLEAR LINK
821
MAKE LINK ADDRESS TABLE
823
INFORM START OF SERVICE
825
TRANSMIT IP PACKET
827
TRANSMIT IP PACKET

FIG. 9

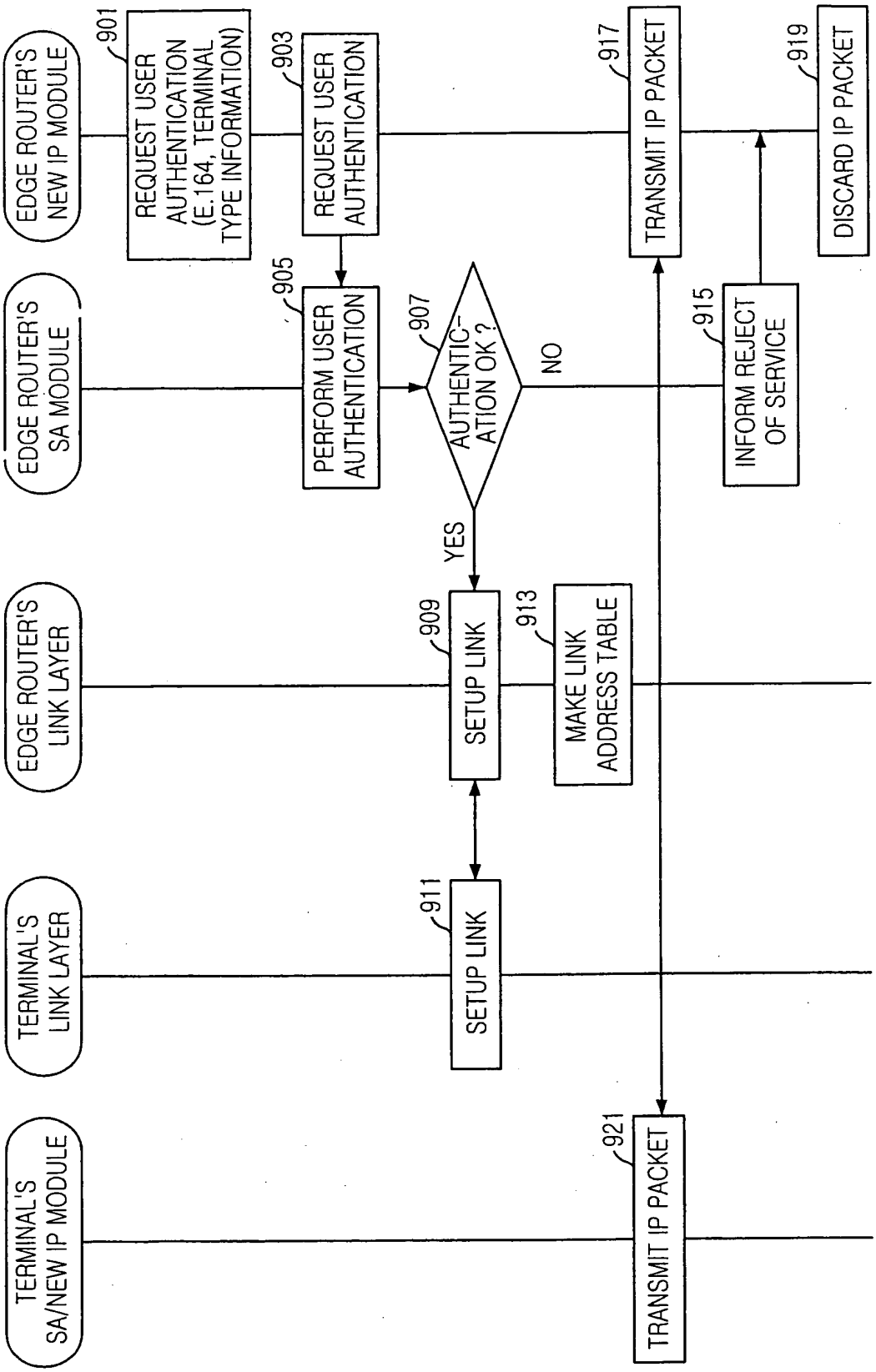
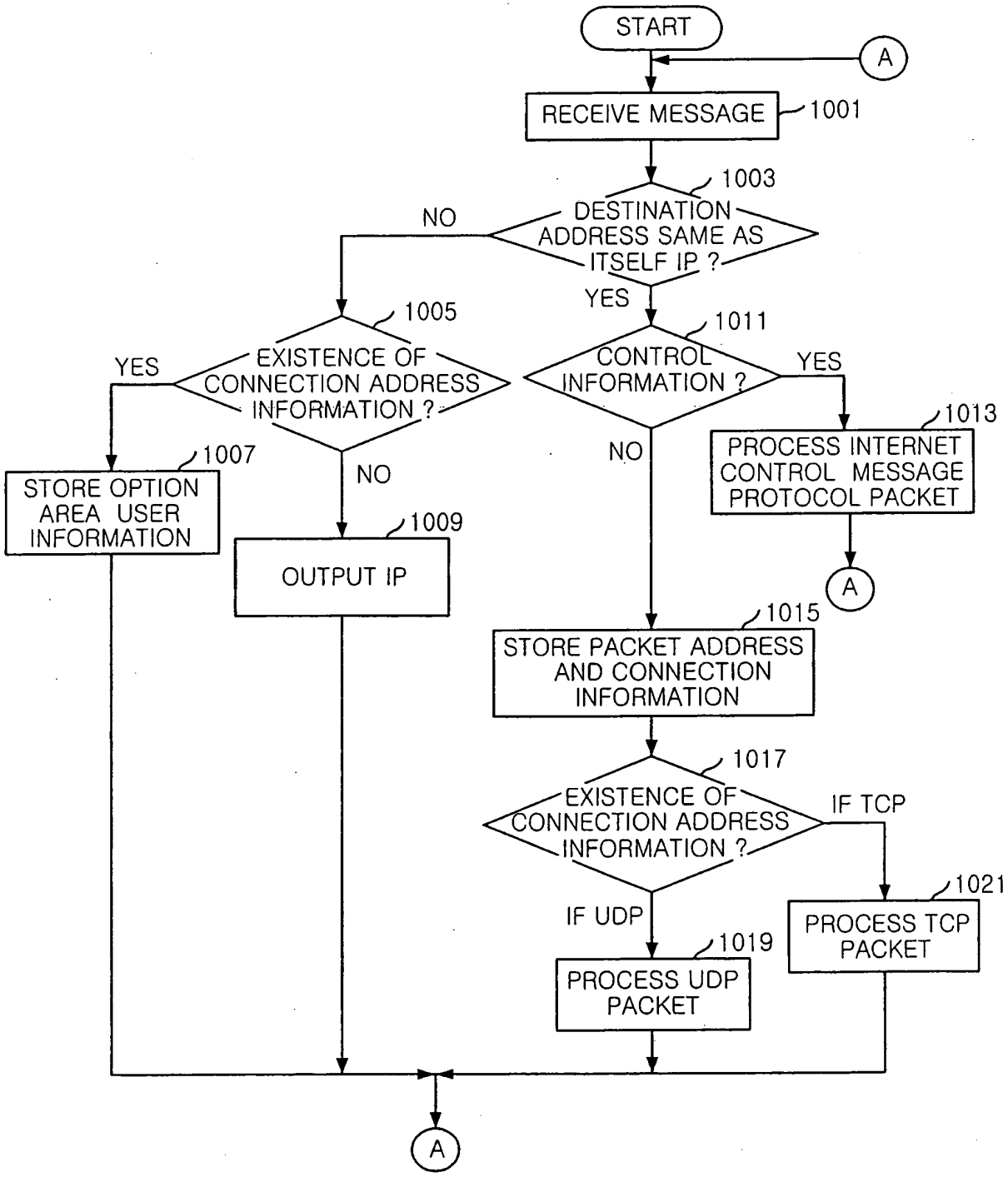

EDGE ROUTER'S NEW IP MODULE
EDGE ROUTER'S SA MODULE
EDGE ROUTER'S LINK LAYER
TERMINAL'S LINK LAYER
TERMINAL'S SA/NEW IP MODULE
901
REQUEST USER AUTHENTICATION (E.164, TERMINAL TYPE INFORMATION)
903
REQUEST USER AUTHENTICATION
905
PERFORM USER AUTHENTICATION
907
AUTHENTIC-ATION OK ?
NO
YES
915
INFORM REJECT OF SERVICE
917
TRANSMIT IP PACKET
919
DISCARD IP PACKET
909
SETUP LINK
913
MAKE LINK ADDRESS TABLE
911
SETUP LINK
921
TRANSMIT IP PACKET

FIG. 10


START
A
RECEIVE MESSAGE
1001
1003
DESTINATION ADDRESS SAME AS ITSELF IP ?
NO
YES
1005
EXISTENCE OF CONNECTION ADDRESS INFORMATION ?
YES
NO
1007
STORE OPTION AREA USER INFORMATION
1009
OUTPUT IP
1011
CONTROL INFORMATION ?
YES
NO
1013
PROCESS INTERNET CONTROL MESSAGE PROTOCOL PACKET
A
1015
STORE PACKET ADDRESS AND CONNECTION INFORMATION
1017
EXISTENCE OF CONNECTION ADDRESS INFORMATION ?
IF TCP
IF UDP
1019
PROCESS UDP PACKET
1021
PROCESS TCP PACKET
A